

WHAT IS CLAIMED IS:

1. An electrophotographic image forming system for forming an electrostatic latent image by applying AC 5 voltage to a charger contacting an image carrier and thereby charging the surface of the image carrier, comprising:

a detection characteristic switching unit for switching current detection characteristics between 10 the non-discharge region and discharge region when detecting AC charge current by applying a particular AC voltage to the charger;

15 a detector for detecting AC charge current in either the switched non-discharge region or discharge region; and

an AC voltage decision unit for deciding AC charge voltage to be applied to the charger during image formation based on the detected AC charge current.

20 2. The system as set forth in claim 1, wherein the current detection characteristic of detected current is switched between the case where an AC voltage no more than a discharge threshold voltage is applied and the case where an AC voltage no less than the 25 discharge threshold voltage is applied.

3. The system as set forth in claim 1, wherein, with

the discharge threshold voltage being the voltage for initiating discharge to the image carrier when DC voltage is applied to the charger, the current running when at least one AC voltage no more than the  
5 discharge threshold voltage is applied to the charger and the current running when at least two AC voltages no less than the discharge threshold voltage are applied thereto are detected during non-image formation.

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4. The system as set forth in claim 1, wherein the detector detects the mean value of the half-wave current of the AC charge current.

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5. An electrophotographic image forming system for forming an electrostatic latent image by applying AC voltage to a charger contacting an image carrier and thereby charging the surface of the image carrier, comprising:

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a first detector that applies a particular AC voltage to the charger and detects AC charge current in the non-discharge region;

a second detector that has a current detection characteristic different from that of the first

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detector and detects AC charge current in the discharge region; and

an AC voltage decision unit that decides an AC

charge voltage to be applied to the charger during image formation based on the detection results of the first detector and the second detector.

5 6. The system as set forth in claim 5, wherein the AC charge voltage is determined from the detection results of the first detector when an AC voltage no more than a discharge threshold voltage is applied and of the second detector when an AC voltage no less than  
10 the discharge threshold voltage is applied.

7. The system as set forth in claim 5, wherein, with the discharge threshold voltage being the voltage for initiating discharge to the image carrier when DC voltage is applied to the charger, the current running when at least one AC voltage no more than the discharge threshold voltage is applied to the charger and the current running when at least two AC voltages no less than the discharge threshold voltage are applied thereto are detected during non-image formation.  
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8. The system as set forth in claim 5, wherein the detector detects the mean value of the half-wave current of the AC charge current.  
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9. An electrophotographic image forming method of

forming an electrostatic latent image by applying AC voltage to a charger contacting an image carrier and thereby charging the surface of the image carrier, comprising the steps of:

- 5        switching the current detection characteristics between the non-discharge region and discharge region when detecting AC charge current by applying a particular AC voltage to the charger;
- 10      detecting AC charge current in either the switched non-discharge region or discharge region;
- deciding AC charge voltage to be applied to the charger during image formation based on the detected AC charge current; and
- 15      controlling the decided AC charge voltage to be applied to the charger during image formation.

10. The method as set forth in claim 9, wherein the current detection characteristic of detected current is switched between the case where an AC voltage no more than a discharge threshold voltage is applied and the case where an AC voltage no less than the discharge threshold voltage is applied.

11. The method as set forth in claim 9, wherein, with the discharge threshold voltage being the voltage for initiating discharge to the image carrier when DC voltage is applied to the charger, the current running

when at least one AC voltage no more than the discharge threshold voltage is applied to the charger and the current running when at least two AC voltages no less than the discharge threshold voltage are applied thereto are detected during non-image formation.

12. The method as set forth in claim 9, wherein the mean value of the half-wave current of the AC charge current is detected.

13. An electrophotographic image forming method of forming an electrostatic latent image by applying AC voltage to a charger contacting an image carrier and thereby charging the surface of the image carrier, comprising:

a first detection step of applying a particular AC voltage to the charger and detecting AC charge current in the non-discharge region;

20 a second detection step of detecting AC charge current in the discharge region using a current detection characteristic different from that of the first detection step;

25 a decision step of deciding an AC charge voltage to be applied to the charger during image formation based on the detection results obtained in the first detection steps and the second detection step; and

a control step of controlling the decided AC charge voltage to be applied to the charger during image formation.

5 14. The method as set forth in claim 13, wherein the AC charge voltage is determined from the detection results obtained in the first detection step when an AC voltage no more than a discharge threshold voltage is applied and in the second detection step when an AC  
10 voltage no less than the discharge threshold voltage is applied.

15. The method as set forth in claim 13, wherein, with the discharge threshold voltage being the voltage for initiating discharge to the image carrier when DC voltage is applied to the charger, the current running when at least one AC voltage no more than the discharge threshold voltage is applied to the charger and the current running when at least two AC voltages  
20 no less than the discharge threshold voltage are applied thereto are detected during non-image formation.

25 16. The method as set forth in claim 13, wherein the mean value of the half-wave current of the AC charge current is detected.

17. A storage medium for storing a computer program for controlling electrophotographic image formation that forms an electrostatic latent image by applying AC voltage to a charger contacting an image carrier 5 and thereby charging the surface of the image carrier, wherein the computer program causes a computer to:

switch current detection characteristics between the non-discharge region and discharge region when detecting AC charge current by applying a particular 10 AC voltage to the charger;

detect AC charge current in either the switched non-discharge region or discharge region;

decide AC charge voltage to be applied to the charger during image formation based on the detected 15 AC charge current; and

control the decided AC charge voltage to be applied to the charger during image formation.

18. A storage medium for storing a computer program 20 for controlling electrophotographic image formation that forms an electrostatic latent image by applying AC voltage to a charger contacting an image carrier and thereby charging the surface of the image carrier, wherein the computer program causes a computer to:

25 apply a particular AC voltage to the charger to detect AC charge current;

detect the AC charge current running in the

charger under a different detection characteristic;  
decide AC charge voltage to be applied to the  
charger during image formation based on the AC charge  
current detected in the non-discharge region or  
5 discharge region; and  
control the decided AC charge voltage to be  
applied to the charger during image formation.